CLAIMS

What is claimed is:

1. A reagent having the structure (I)

Phos—Cgp—Trl—Cgp'—Nucl (I)

wherein:

Phos is a reactive phosphorus group,

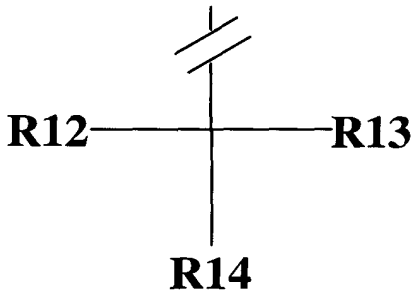
Trl is a triaryl methyl linker group,

Cgp is a linking group linking the reactive phosphorus group and the triaryl methyl linker group, or is a bond linking the reactive phosphorus group and the triaryl methyl linker group,

Nucl is a nucleoside moiety, and

Cgp' is a linking group linking the nucleoside moiety and the triaryl methyl linker group, or is a bond linking the nucleoside moiety and the triaryl methyl linker group.

2. The reagent of claim 1, wherein the triaryl methyl linker group has the structure (IV)



(IV)

wherein the broken line represents the bond to the linking group denoted Cgp' in structure (I), and

wherein R12, R13, and R14 are independently selected from unsubstituted or substituted aryl groups, provided that one of R12, R13, and R14 is substituted by being bound to the reactive phosphorus group via the Cgp group.

3. The reagent of claim 2, wherein R12, R13, and R14 are independently selected from substituted phenyl and unsubstituted phenyl, provided that one of R12, R13, or R14 is substituted by being bound to the reactive phosphorus group via the Cgp group.

4. The reagent of claim 2, wherein R12, R13 and R14 are optionally substituted aryl groups independently selected from phenyl, biphenyl, naphthanyl, indolyl, pyridinyl, pyrrolyl, thiophenyl, furanyl, annulenyl, quinolinyl, and anthracenyl.

5. The reagent of claim 4, wherein at least one of R12, R13, and R14 is selected from naphthanyl, indolyl, pyridinyl, pyrrolyl, thiophenyl, furanyl, annulenyl, quinolinyl, and anthracenyl.

6. The reagent of claim 2, wherein R12, R13, and R14 are independently selected from phenyl, methoxyphenyl, dimethoxyphenyl, trimethoxyphenyl, and furanyl.

7. The reagent of claim 1, wherein the linking group denoted Cgp is selected from

(1) a lower alkyl group;

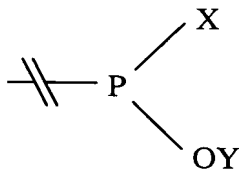
(2) a modified lower alkyl group in which one or more linkages selected from ether-, oxo-, thio-, amino-, phospho-, silyloxi, is present;

(3) a substituted lower alkyl group having one or more additional groups including lower alkyl, aryl, aralkyl, alkoxyl, thioalkyl, hydroxyl, amino, sulfonyl, halo; and

(4) a modified lower alkyl having (4a) one or more linkages selected from ether-, oxo-, thio-, amino-, phospho-, silyloxi and also having (4b) one or more additional groups selected from lower alkyl; aryl; aralkyl; alkoxyl; thioalkyl; hydroxyl; amino; nitro; nitroso; cyano; sulfonyl; carbonyl; carboxy; and halo.

8. The reagent of claim 1, wherein the linking group denoted Cgp' comprises a polynucleotide moiety.

9. The reagent of claim 1, wherein Phos has the structure (VI)



(VI)

wherein:

The broken line indicates the bond to the Cgp';

X is selected from halogen or a secondary amino group; and

Y is selected from hydrido, hydrocarbyl, or substituted hydrocarbyl.

10. The reagent of claim 9, wherein X is a secondary amino group having the structure —NQ1Q2; in which Q1 and Q2 are independently selected from the group consisting of alkyl, aryl, aralkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, and cycloalkynyl, optionally containing one or more nonhydrocarbyl linkages and optionally substituted on one or more available carbon atoms.

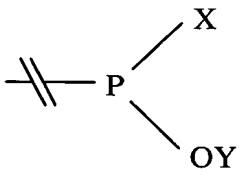
11. The reagent of claim 9, wherein Y is selected from alkyl, lower alkyl, alkenyl, benzyl, substituted benzyl, aryl, aralkyl, cycloalkyl, electron-withdrawing β-substituted alkyl, electron-withdrawing β -substituted ethyl; electron-withdrawing substituted phenyl; or electron-withdrawing substituted phenylethyl.

12. The reagent of claim 9, wherein X is a diisopropyl amino group and Y is selected from methyl, benzyl, substituted benzyl, β-cyanoethyl, methyl-β-cyanoethyl, dimethyl-β-cyanoethyl, phenylsulfonylethyl, methyl-sulfonylethyl, *p*-nitrophenylsulfonylethyl, 2,2,2-trichloro-1,1-dimethylethyl, 2-(4-pyridyl)ethyl, 2-(2-pyridyl)ethyl, allyl, 4-methylene-1-acetylphenol, β-thiobenzoylethyl, 1,1,1,3,3,3-hexafluoro-2-propyl, 2,2,2-trichloroethyl, *p*-nitrophenylethyl, *p*-cyanophenyl-ethyl, 9-fluorenylmethyl, 1,3-dithionyl-2-methyl, 2-(trimethylsilyl)ethyl, 2-methylthioethyl, 2-(diphenylphosphino)-ethyl, 1-methyl-1-phenylethyl, 3-buten-1-yl, 4-(trimethylsilyl)-2-buten-1-yl, cinnamyl, α-methylcinnamyl, and 8-quinolyl.

13. A method comprising:

contacting a solid support having an available reactive group bound thereto with a reagent having a reactive phosphorus group attached to a nucleoside moiety via a triaryl methyl linker group, the contacting being performed under conditions and for a time sufficient to result in the nucleoside moiety bound to the support via the triaryl methyl linker group, wherein the triaryl methyl linker group is bound to the support via a phosphorus-containing linkage group.

14, The method of claim 13, wherein the available reactive group is selected from hydroxyl, amino, and thio, and the reactive phosphorus group has the structure (VI)



(VI)

wherein:

The broken line indicates the bond via which the reactive nucleoside group is attached to the nucleoside moiety;

X is selected from halogen or a secondary amino group; and

Y is selected from hydrido, hydrocarbyl, or substituted hydrocarbyl.

15 The method of claim 14, wherein X is a secondary amino group having the structure —NQ1Q2; in which Q1 and Q2 are independently selected from the group consisting of alkyl, aryl, aralkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, and cycloalkynyl, optionally containing one or more nonhydrocarbyl linkages and optionally substituted on one or more available carbon atoms.

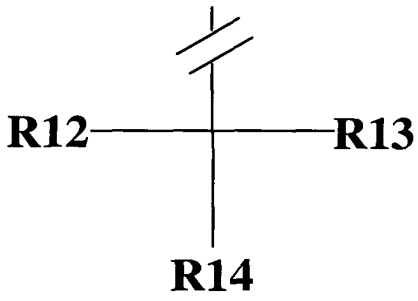
16 The method of claim 14, wherein Y is selected from alkyl, lower alkyl, alkenyl, benzyl, substituted benzyl, aryl, aralkyl, cycloalkyl, electron-withdrawing β-substituted alkyl, electron-withdrawing β -substituted ethyl; electron-withdrawing substituted phenyl; or electron-withdrawing substituted phenylethyl.

17. The method of claim 13, wherein the nucleoside moiety has a hydroxyl protecting group bound thereto.

18 The method of claim 17, further comprising contacting the nucleoside moiety bound to the support with a combined deprotection/ oxidation agent under conditions and for a time sufficient to concurrently remove the hydroxyl protecting group and oxidize the phosphorus-containing linkage group.

19. The method of claim 18, wherein the combined deprotection/ oxidation agent comprises an alpha effect nucleophile.

20. The method of claim 13, wherein the triaryl methyl linker group has the structure (IV)



(IV)

wherein the broken line represents the bond via which the triaryl methyl linker group is bound to the nucleoside moiety, and

wherein R12, R13, and R14 are independently selected from unsubstituted or substituted aryl groups, provided that one of R12, R13, and R14 is substituted by being bound to the reactive phosphorus group.

21. The method of claim 20, wherein R12, R13, and R14 are independently selected from substituted phenyl and unsubstituted phenyl, provided that one of R12, R13, or R14 is substituted by being bound to the reactive phosphorus group.

22. The method of claim 20, wherein R12, R13 and R14 are optionally substituted aryl groups independently selected from phenyl, biphenyl, naphthanyl, indolyl, pyridinyl, pyrrolyl, thiophenyl, furanyl, annulenyl, quinolinyl, and anthracenyl.

23. The method of claim 20, wherein at least one of R12, R13, and R14 is selected from naphthanyl, indolyl, pyridinyl, pyrrolyl, thiophenyl, furanyl, annulenyl, quinolinyl, and anthracenyl.